

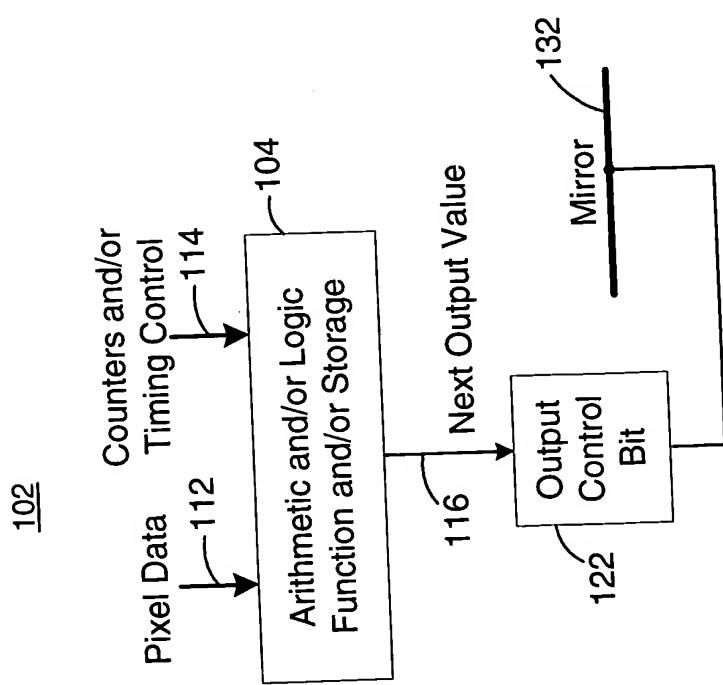
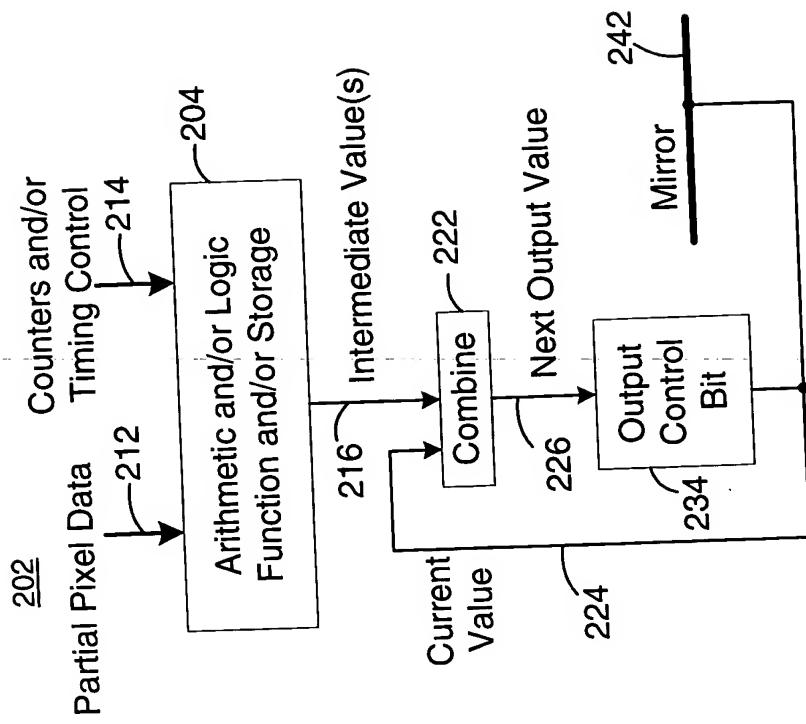
FIG. 1**FIG. 2**

FIG. 3

Count	Read Bits	Decision to turn off Display-Bit
210		
0	000 Read Bits 2,1,0	If all three are not 0, turn on output
1	001 Read Bits 2,1	If both 0, turn off output
2	010 Read Bits 2,0	If both 0, turn off output
3	011 Read Bit 2	If 0, turn off output, bit 2 memory is free
4	100 Read Bits 1,0	If both zero, turn off output
5	101 Read Bit 1	If 0, turn off output, bit 1 memory is free
6	110 Read Bit 0	If 0, turn off output, bit 0 memory is free
7	111 No reads	turn off output

FIG. 4

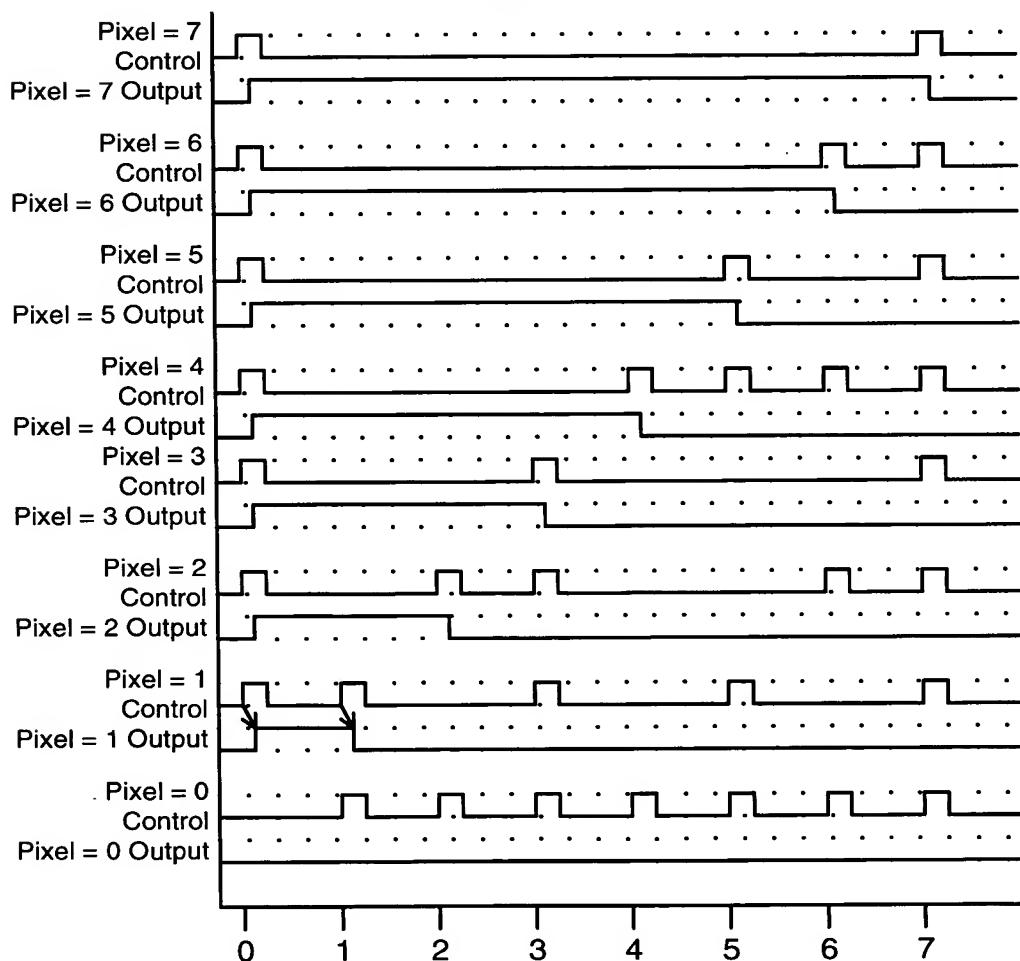


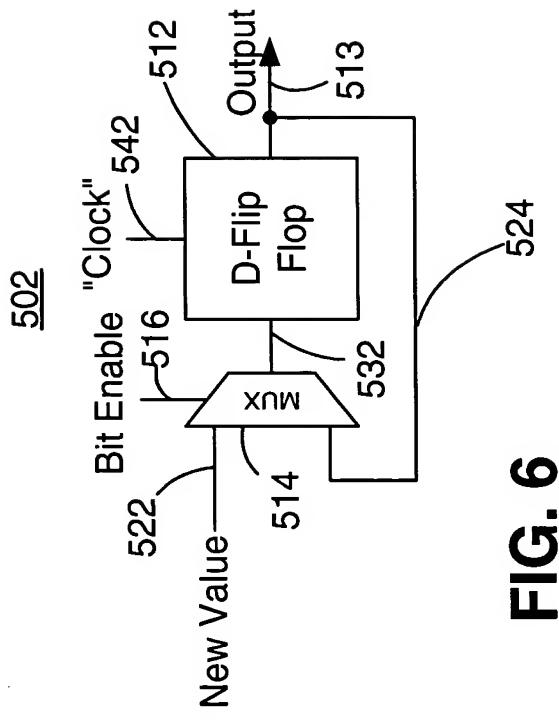
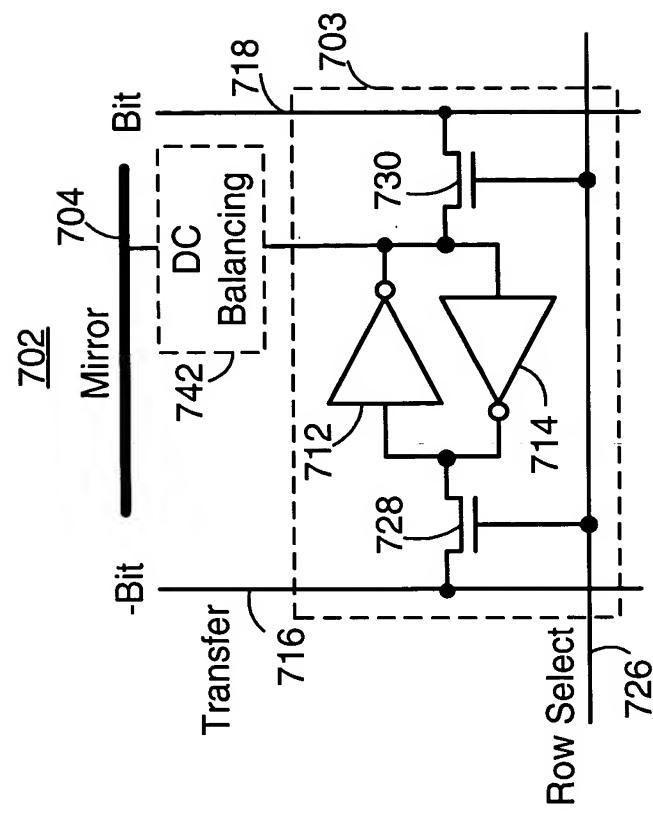
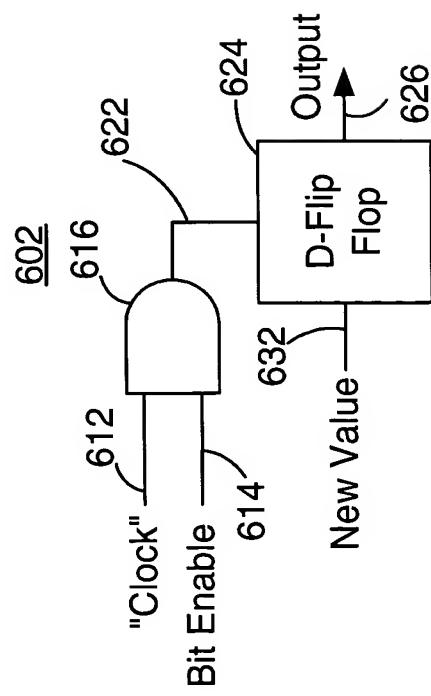
FIG. 5**FIG. 7****FIG. 6**

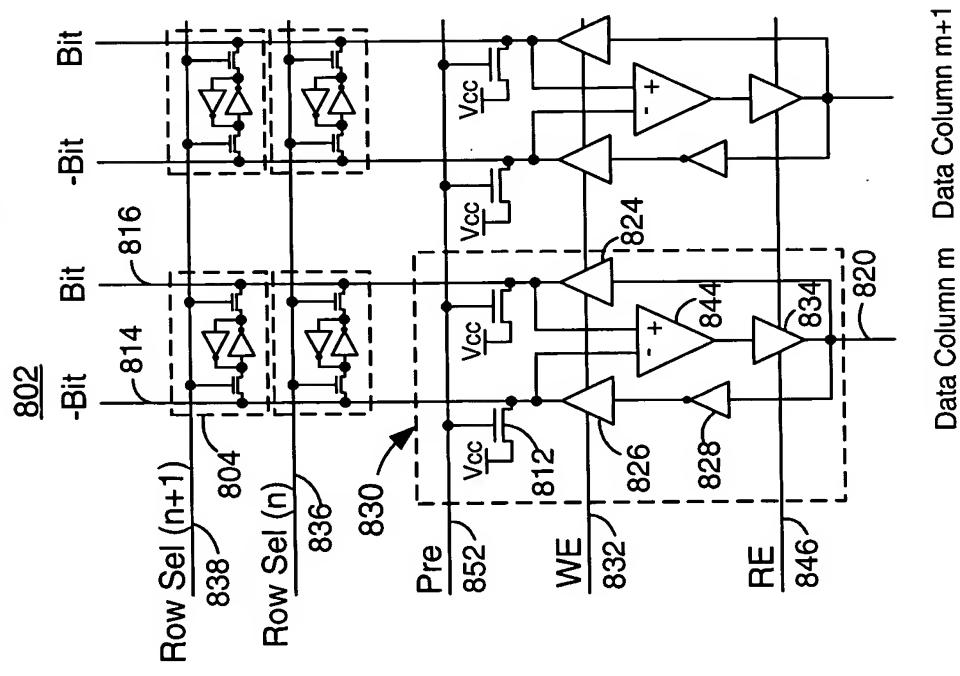
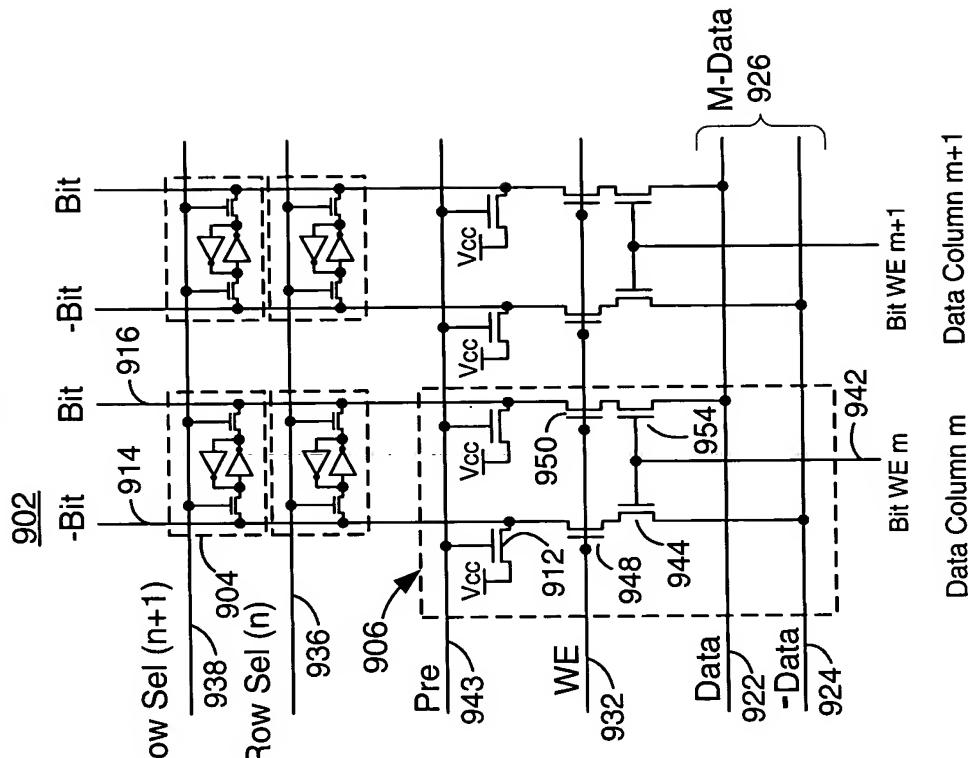
FIG. 8**FIG. 9**

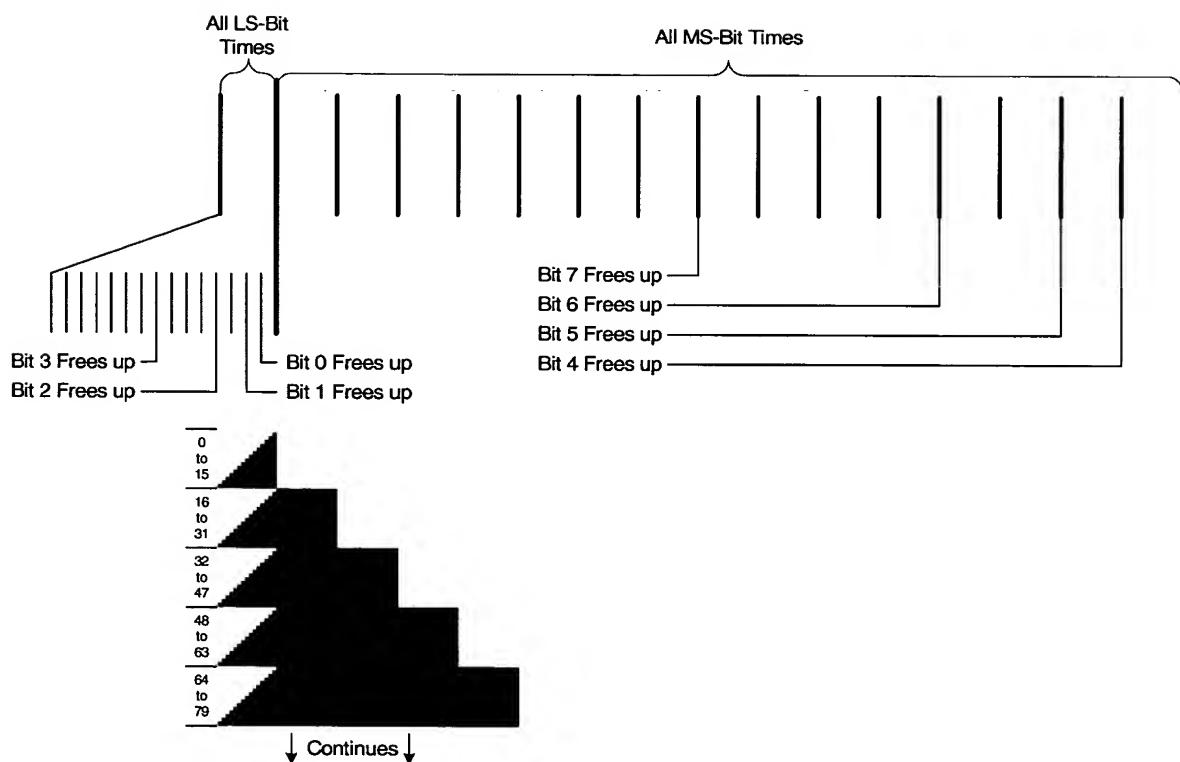
FIG. 10

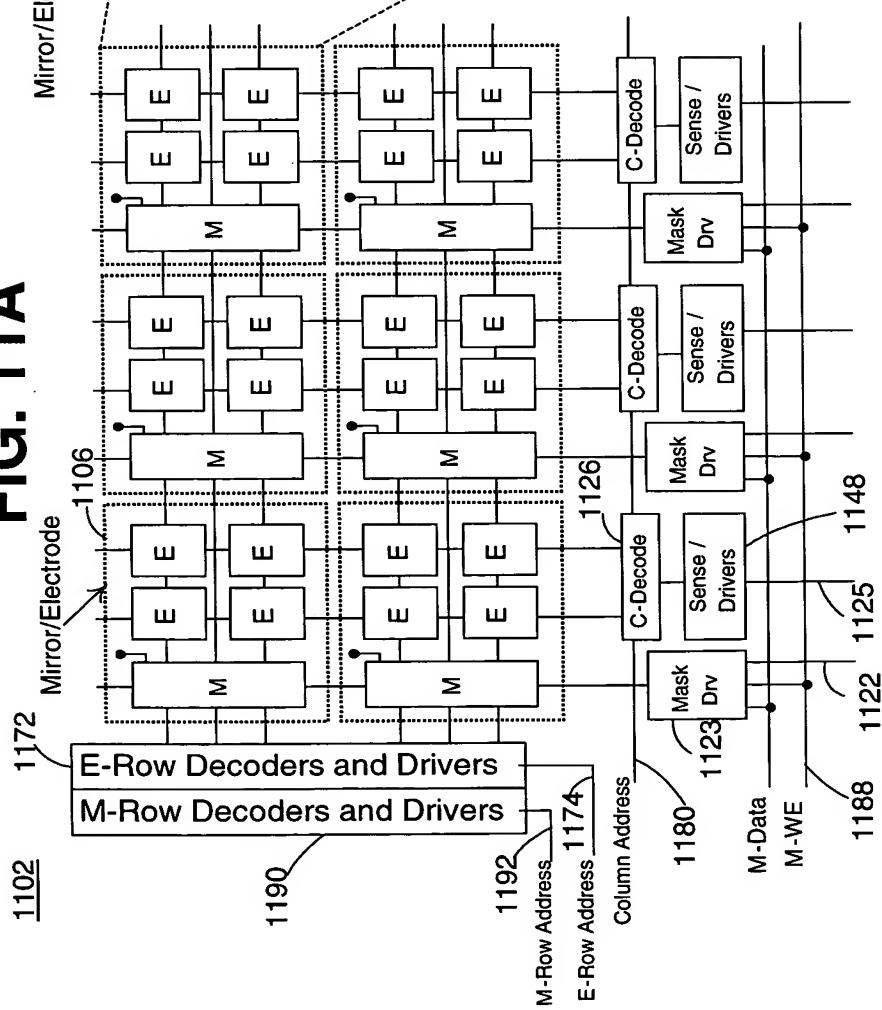
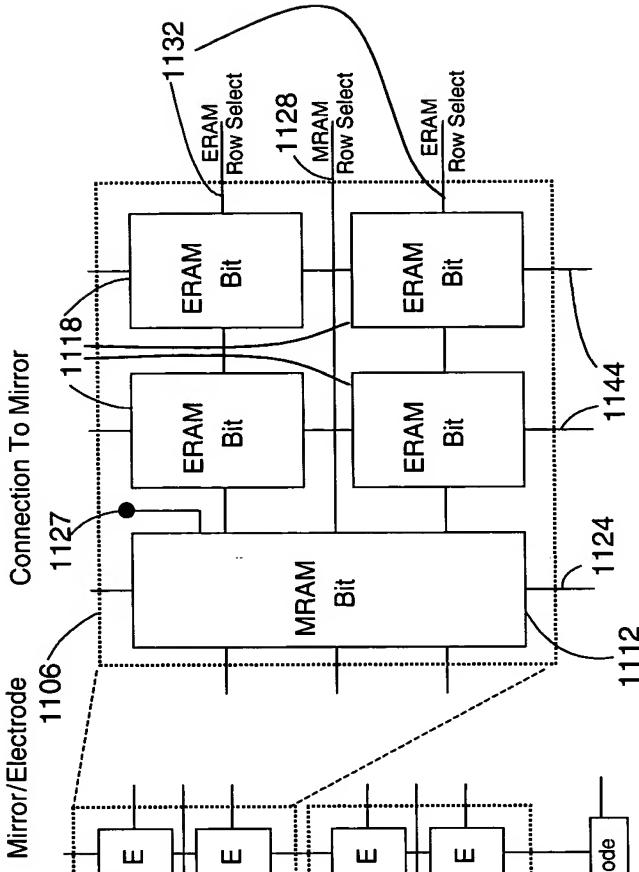
FIG. 11A**FIG. 11B**

FIG. 12

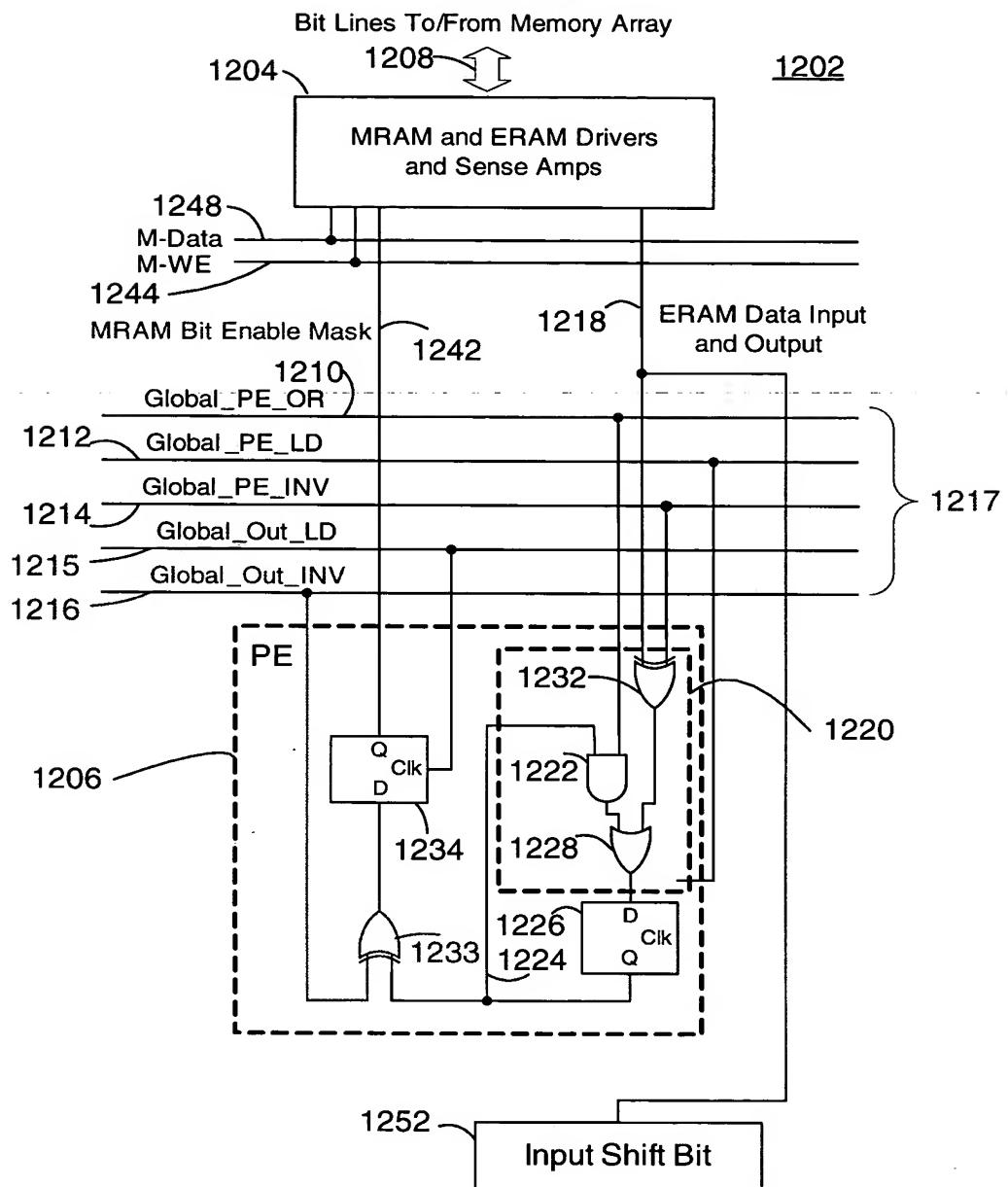


FIG. 13

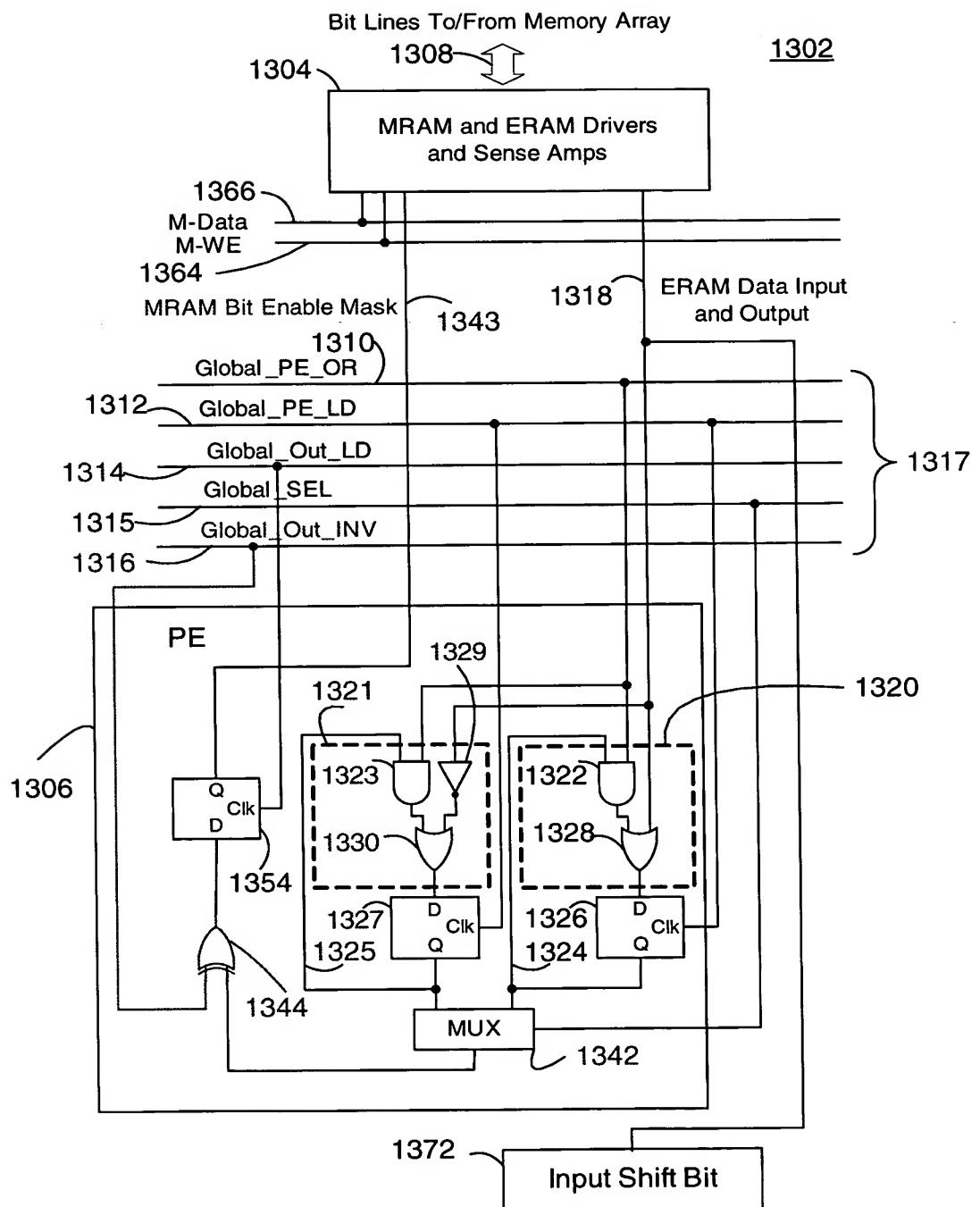


FIG. 14

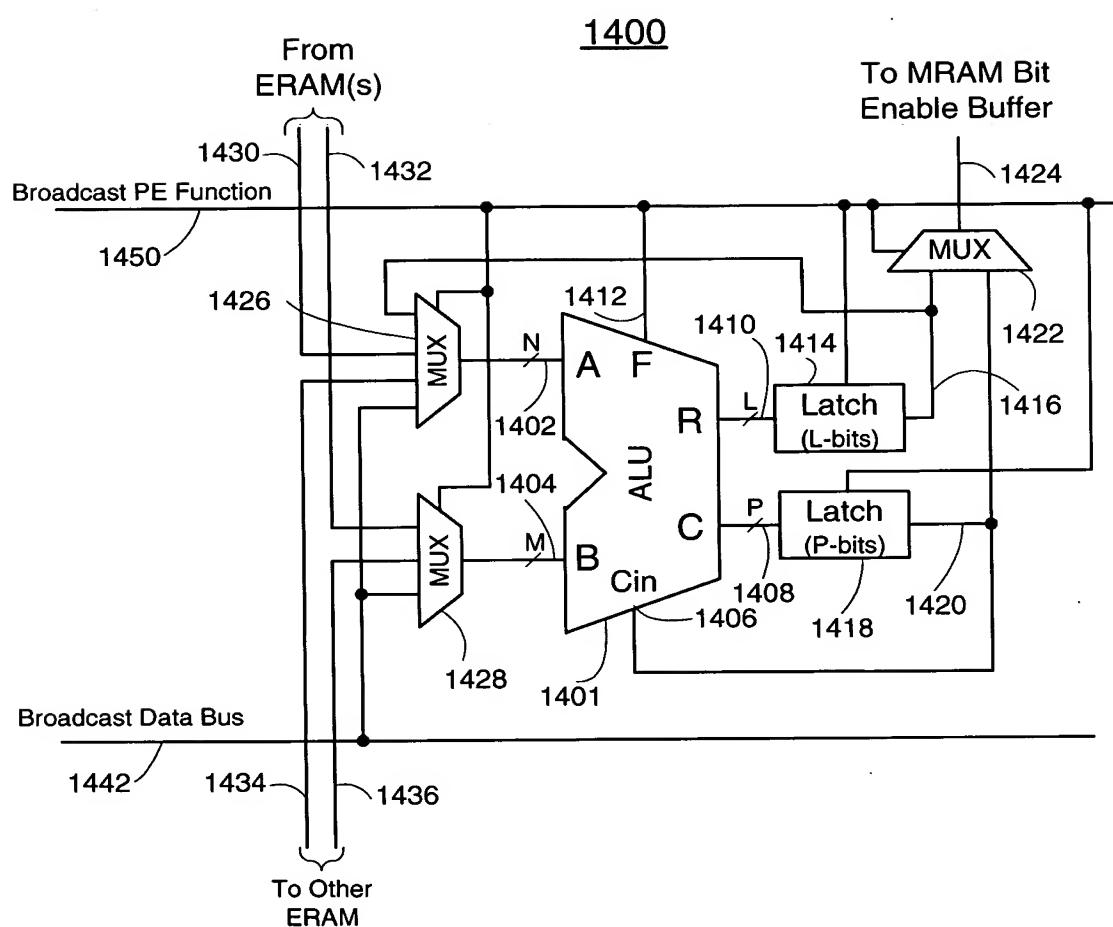


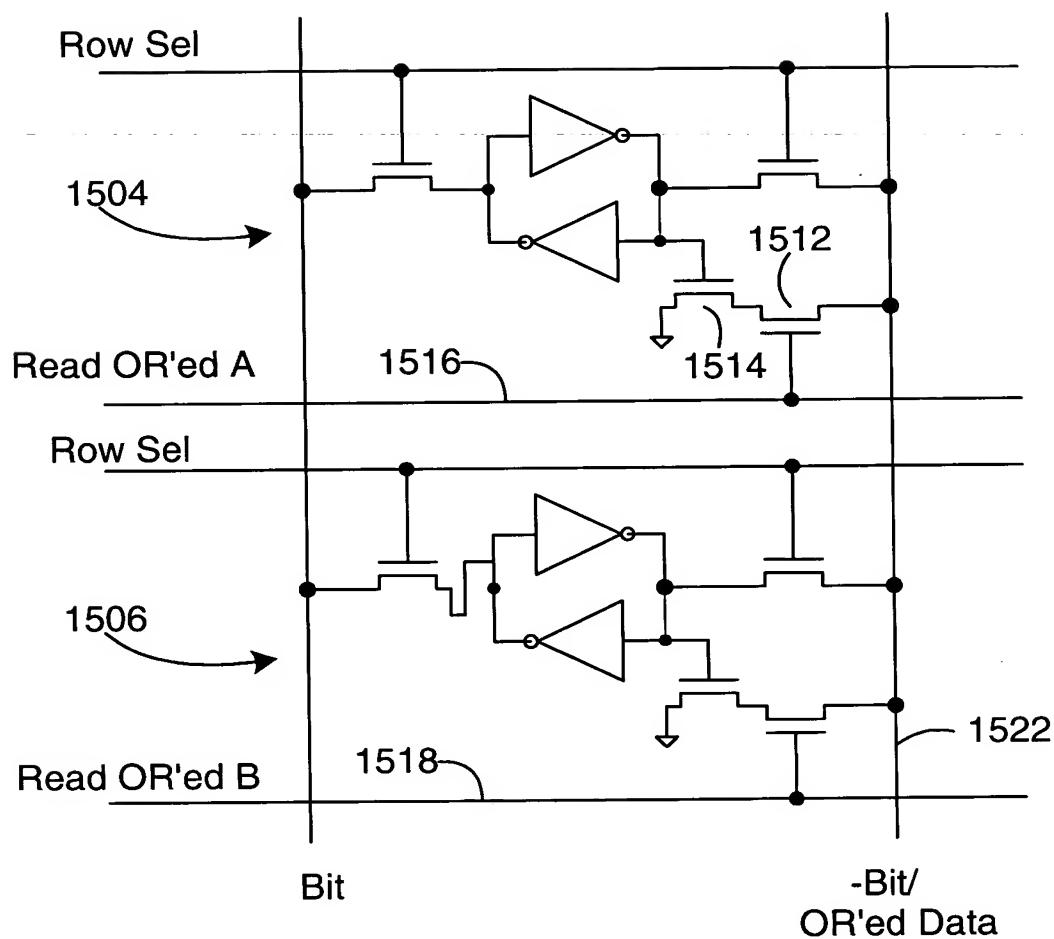
FIG. 151502

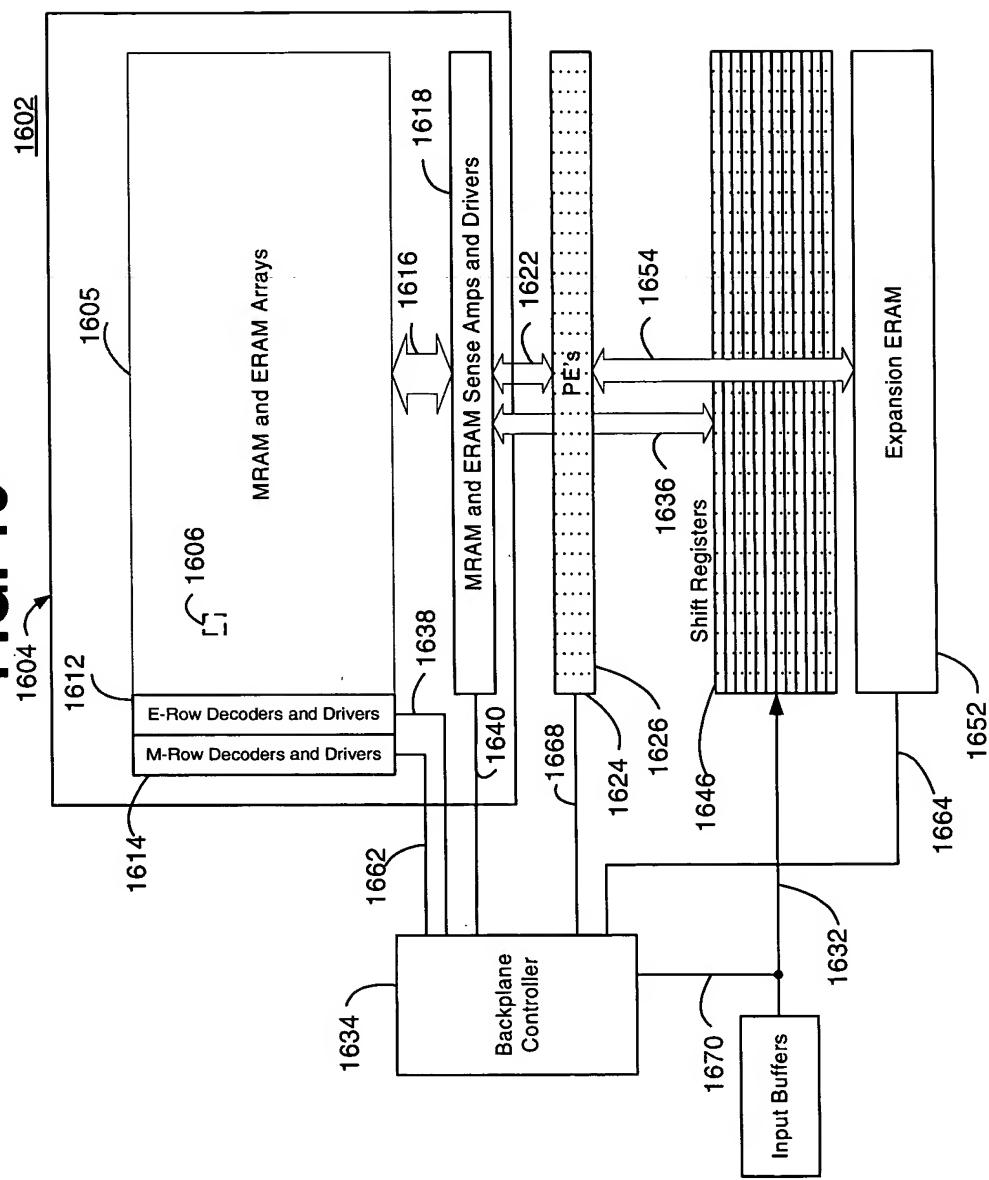
FIG. 16

FIG. 17

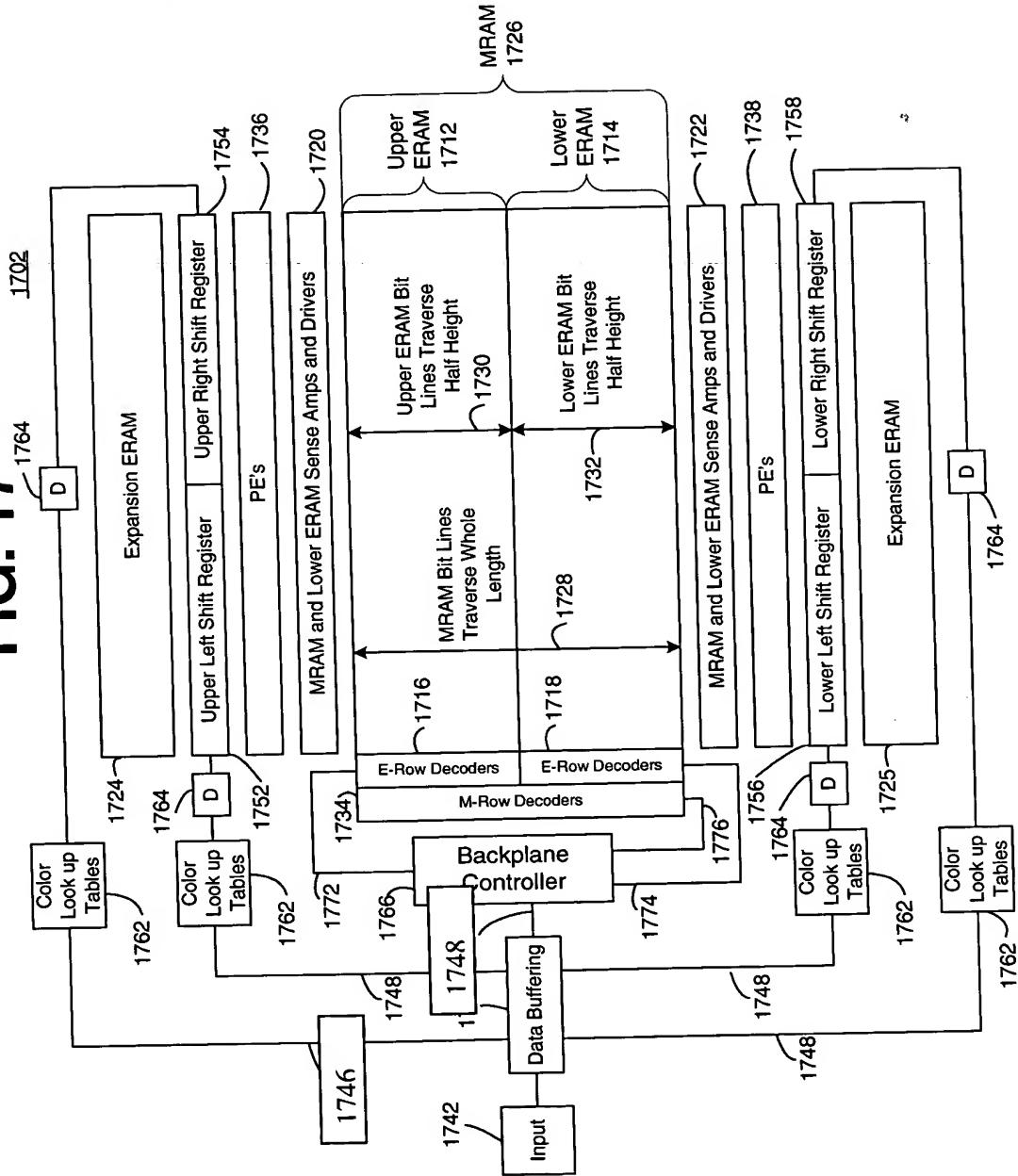


FIG. 18

13/27

Simple 2-LS Bit Count and 2-MS Bit Split Count Example With LS-Bit Time = 4 Clocks and 17 Clocks Between Lines Un-Corrected

	LS MRAM			MS MRAM				LS BRAM Reads				MS BRAM Reads									
Count #	3	2	1	0	0	1	2	3	3	2	1	0	1	2	3	LSB Time=	4				
Binary Count	###	###	###	###	###	###	###	###								Line Time=	17				
Binary TWeight	0	4	8	12	13	28	44	60													
Adjusted Time	0	4	8	12	13	28	44	60													
Offset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Write	Write	Read	Read		
Set/Reset Disp.	S	S	S	R	S	R	R	R								Pattern	Conflict	Pattern	Conflict		
TIME (Clocks)																					
2									0							0	1000000				
-1										1						0	1000000				
0	0															10000000	0				
1																0	0				
2																0	0				
3											1					0	100000				
4		0														1000000	0				
5																0	0				
6																0	0				
7												0				0	10000				
8		0														100000	0				
9																0	0				
10												2				0	1000				
11												3				0	1000				
12			0													10000	0				
13			0													1000	0				
14																0	1000000				
15									0							0	1000000				
16									1							0	1000000				
17	1															10000000	0				
18																0	0				
19																0	0				
20										1						0	100000				
21	1															1000000	0				
22																0	0				
23																0	0				
24											0					0	10000				
25		1														100000	0				
26																0	0				
27												2	3			0	1100	Read Conflict			
28												3				100		1000			
29			1													10000	0				
30			1													0	0				
31																0	1000000				
32											0					0	1000000				
33											1					0	1000000				
34	2															10000000	0				
35																0	0				
36																0	0				
37											1					0	100000				
38	2															1000000	0				
39																0	0				
40																0	0				
41												0				0	10000				
42		2														100000	0				
43																2	0	10			
44											0		3		10		1100	Read Conflict			
45																10000	0				
46																10000	0				
47												2				1000	0				
48																0	0				
49												0				0	1000000				
50												1				0	1000000				
51	3															10000000	0				
52																0	0				
53																0	0				
54											1					0	0	100000			
55	3															1000000	0				
56																0	0				
57																0	0	10000			
58												0				0	10000	0			
59		3														2	1	10			
60																2	3	10			
61																3	100	1000			
62																0	10000	0			
63			3													0	10000	0			

FIG. 19

14/27

Simple 2-LS Bit Count and 2-MS-Bit Split Count Example With LS-Bit Time = 4 Clocks and 17 Clocks Between Lines Corrected

	LS MRAM			MS MRAM			LS ERAM Reads			MS ERAM Reads							
Count #	3	2	1	0	0	1	2	3	3	2	1	0	1	2	3	LSB Time=	4
Binary Count	11	10	01	00	00	01	10	11								Line Time=	17
Binary T Weight	0	4	6	12	13	26	44	60									
Adjusted Time	0	4	8	12	13	26	44	60									
Offset	0	0	0	0	0	0	0	0	0	0	0	1	1	0	Write	Write	Read
Set/Reset Disp.	S	S	S	R	S	R	R	R							Pattern	Conflict	Pattern
TIME (Clocks)																	
-2									0						0	1000000	
-1									1						0	1000000	
0	0														10000000	0	
1															0	0	
2															0	0	
3									1						0	100000	
4	0														1000000	0	
5															0	0	
6															0	0	
7										0					0	10000	
8	0														100000	0	
9															0	0	
10										2					0	1000	
11										3					0	1000	
12		0													10000	0	
13		0													1000	0	
14															0	0	
15									0						0	1000000	
16									1						0	1000000	
17	1														10000000	0	
18															0	0	
19															0	0	
20									1						0	100000	
21	1														1000000	0	
22															0	0	
23															0	0	
24										0					0	10000	
25		1													100000	0	
26											3				0	100	
27										2					0	1000	
28										3					100	1000	
29			1												10000	0	
30			1												1000	0	
31															0	0	
32									0						0	1000000	
33									1						0	1000000	
34	2														10000000	0	
35															0	0	
36															0	0	
37									1						0	100000	
38	2														1000000	0	
39															0	0	
40															0	0	
41										0					0	10000	
42	2											2			100000	10	
43											3				0	100	
44										2					10	1000	
45										3					100	1000	
46															10000	0	
47															1000	0	
48															0	0	
49										0					0	1000000	
50										1					0	1000000	
51	3														10000000	0	
52															0	0	
53															0	0	
54										1					0	100000	
55	3														1000000	0	
56															0	0	
57															0	0	
58											0				0	10000	
59		3													2	100000	10
60										0					3	1	100
61												2			10	1000	
62											3				100	1000	
63									3						10000	0	

FIG. 20 15/27

Simple 2-LS Bit Count and 2-MS Bit Split Count Example With LS-Bit Time = 4 Clocks and 13 Clocks Between Lines Un-Corrected

	LS MRAM			MS MRAM				LS ERAM Reads			MS ERAM Reads								
Count #	3	2	1	0	0	1	2	3	3	2	1	0	1	2	3	LSB Time=	4		
Binary Count	11	10	01	00	00	01	10	11								Line Time=	13		
Binary T-Weight	0	4	8	12	13	26	44	60											
Adjusted Time	0	4	8	12	13	26	44	60											
Offset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Write	Write	Read	Read
Set/Reset Disp.	S	S	S	R	S	R	R	R								Pattern	Conflict	Pattern	Conflict
TIME (Clocks)																			
-2									0							0	1000000		
-1									1							0	1000000		
0	0															10000000	0		
1																0	0		
2										1						0	0	100000	
3											1					1000000	0		
4	0															0	0		
5																0	0		
6																	10000		
7										0						0	100000		
8	0															0	0		
9																0	1000		
10											2					0	0	1001000	Read Conf.
11										0		3				10000	0	1000000	
12		0								1						10001000	Write Conf.	0	
13	1	0														0	0		
14																0	0		
15																	100000		
16									1							1000000	0		
17	1															0	0		
18																0	0		
19																0	10000		
20										0						100000	0		
21		11														0	0		
22																0	1000		
23											2					0	0	1001000	Read Conf.
24										0		3				10000	0	1000000	
25		1	1							1						10001000	Write Conf.	0	
26	2	1	1													0	100		
27				0												100	0		
28				0						1						0	100000		
29	2															1000000	0		
30		2														0	0		
31																0	0		
32																0	10000		
33										0						1000000	0		
34	2															0	0		
35																0	1000		
36											2					0	0	1001000	Read Conf.
37										0		3				10000	0	1000000	
38	2									1						10001000	Write Conf.	0	
39	3	2														0	100		
40			1													100	0		
41			1													0	100000		
42		3									1					1000000	0	10	
43		3		0												10	0		
44				0												0	10000		
45																0	100000		
46											0					100000	0		
47		3														0	0	0	
48																0	1000		
49												2				0	0	1001000	Read Conf.
50											0		3			0	0	1000000	
51											1					10000	0	1000000	
52	4	3	3													10001000	Write Conf.	0	
53																0	100		
54																100	0		
55	4	2									1					0	0	100000	
56		4														2	1000000	0	10
57											1					10	0	0	
58																0	0	10000	
59												0				1000000	1	Write Conf.	0
60		4														0	0	0	1000000
61																2	0	0	1000
62																3	0	0	1001000
63																0	0	0	Read Conf.

FIG. 21

16/27

Simple 2-LS Bit Count and 2-MS Bit Split Count Example With LS-Bit Time = 4 Clocks and 13 Clocks Between Lines Connected

	LS MRAM			MS MRAM				LS ERAM Reads				MS ERAM Reads								
Count #	3	2	1	0	0	1	2	3	3	2	1	0	1	2	3	LSB Time=	4			
Binary Count	####	####	####	####	####	####	####	####								Line Time=	13			
Binary T Weight	0	4	8	12	13	28	44	60												
Adjusted Time	0	4	8	12	14	29	45	61												
Offset	0	0	0	0	1	1	1	1	0	0	0	1	0	0	0	Write	Write	Read	Read	
Set/Reset Disp.	S	S	S	R	S	R	R	R								Pattern	Conflict	Pattern	Conflict	
TIME (Clocks)																				
-2									0							0	1000000			
-1									1							0	1000000			
0	0															10000000	0			
1																0	0			
2																0	0			
3									1							0	1000000			
4	0															1000000	0			
5																0	0			
6																0	0			
7										0						0	10000			
8	0															100000	0			
9											2					0	1000			
10										3						0	1000			
11									0							1000000	0			
12		0							1							10000	1000000			
13	1															1000000	0			
14		0														1000	0			
15									1							0	100000			
16											0					1000000	0			
17	1															1000000	0			
18																0	0			
19																0	0			
20									0							0	10000			
21		1														100000	0			
22											2					0	1000			
23										3						0	1000			
24									0							0	1000000			
25		1							1							10000	1000000			
26	2															1000000	0			
27		1														1000	0			
28																3	0	100		
29			0								1					100	1000000	0		
30	2															1000000	0			
31																0	0			
32																0	100000			
33										0						100000	0			
34		2														2	0	1000		
35											3					3	0	1000		
36																0	1000000			
37									0							10000	1000000			
38			2						1							10000	1000000			
39	3															10000000	0			
40		2														10000	0			
41			1								1					2	0	100		
42			3													1000000	0			
43																1000000	0			
44																2	0	10		
45									0							10	0	0	100000	
46											0					100000	0			
47		3														2	0	1000		
48																3	0	1000		
49											0					0	1000000			
50			3								1					10000	1000000			
51			4													10000000	0			
52																1000	0			
53																1000	0			
54																100	0	100	100000	
55									2							1000000	0			
56										1						2	0	10	0	
57																10	0	0	0	
58																0	0	10000	0	
59																100000	0			
60									0							2	1	0	1000	
61																3	0	0	1000	
62																0	0	1000000		
63											0					0	0	0	1000000	

FIG. 22

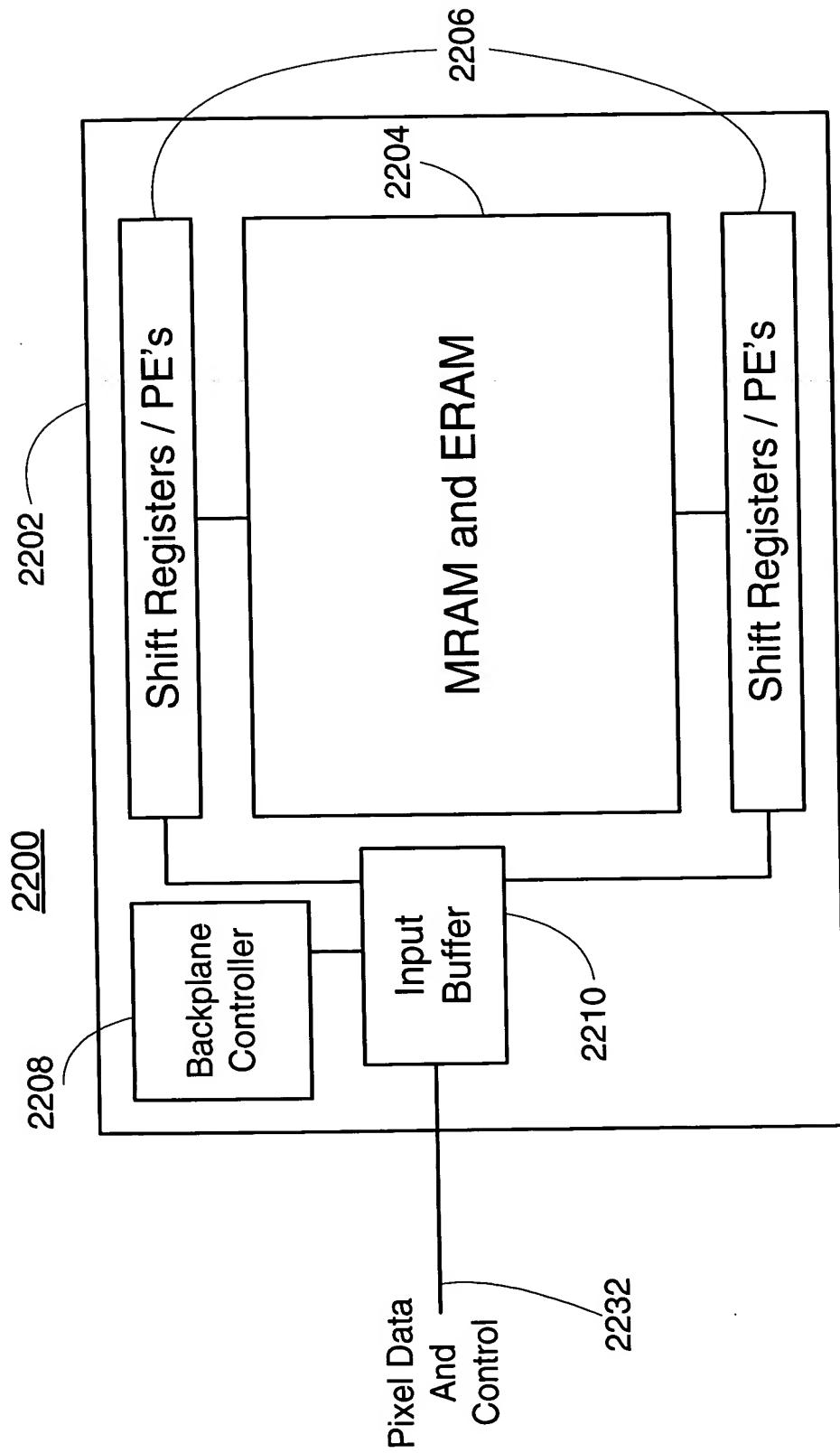


FIG. 23

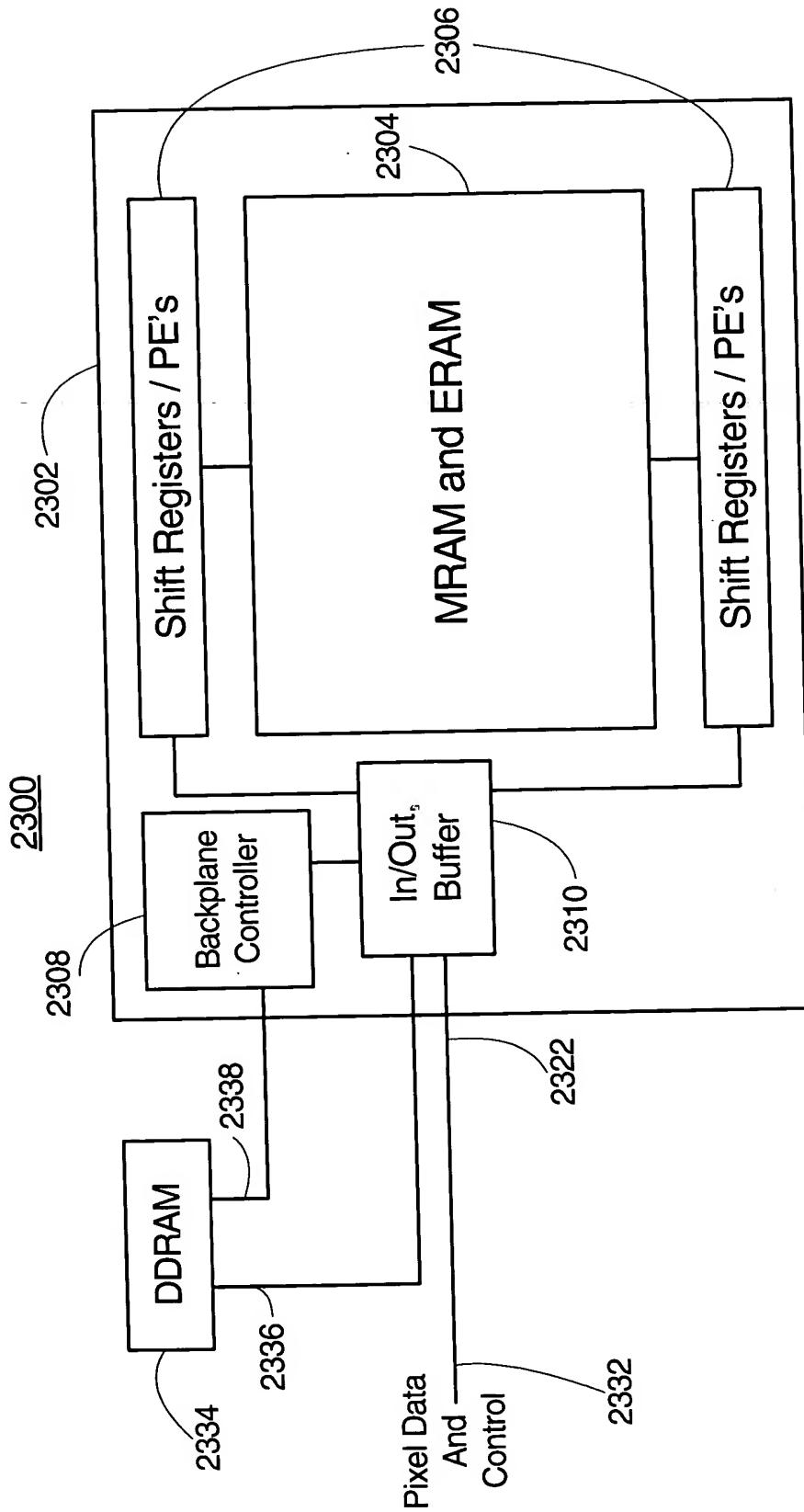


FIG. 24

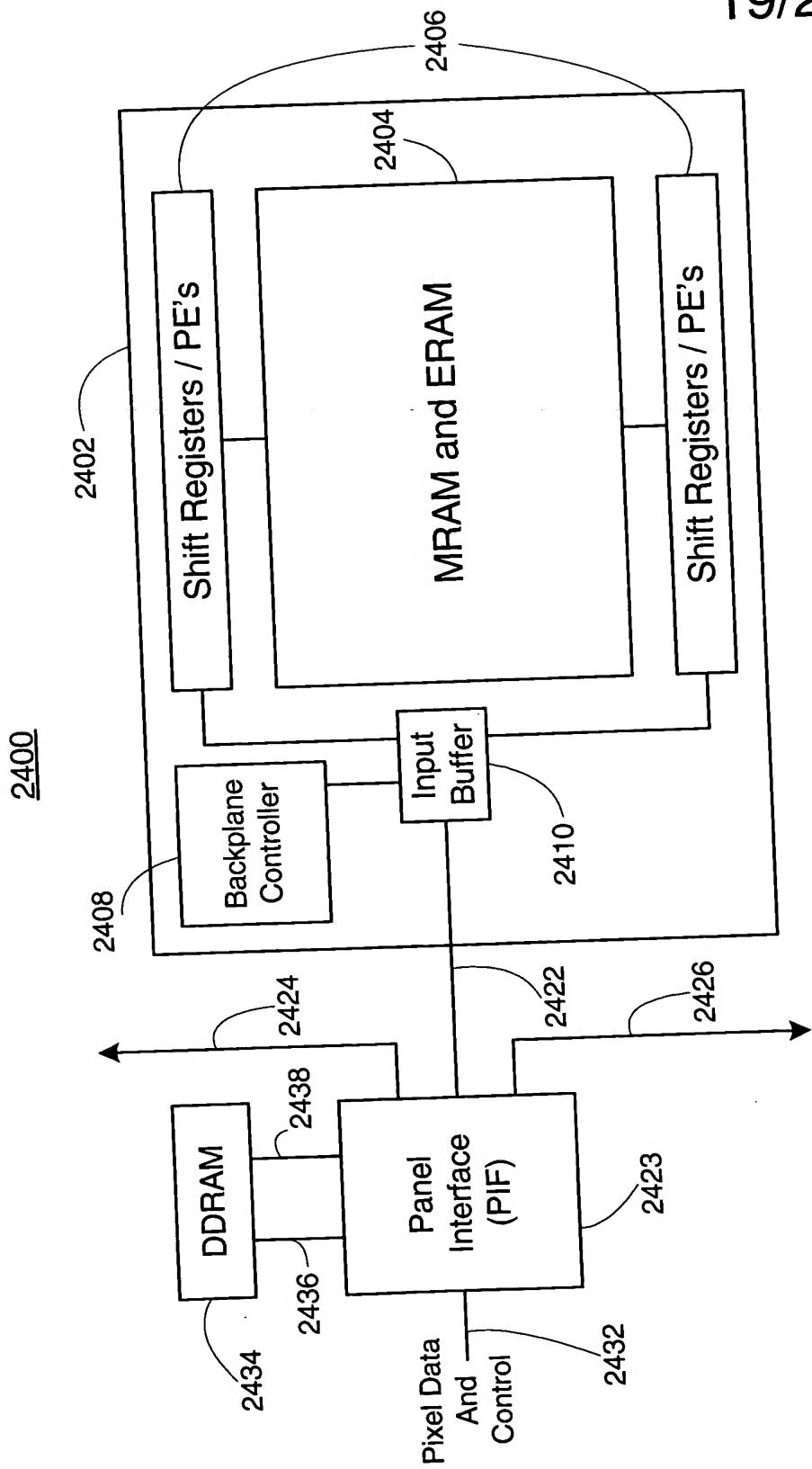


FIG. 25

Pixel Value	Binary Bits 9-6	P1	P2	Number Reads
0	0000	0	0	2
1	0001	0	1	2
2	0010	0	1	2
3	0011	0	1	1
4	0100	1	0	2
5	0101	1	1	2
6	0110	1	1	2
7	0111	1	1	1
8	1000	1	0	2
9	1001	1	1	2
10	1010	1	1	2
11	1011	1	1	1
12	1100	1	0	1
13	1101	1	1	1
14	1110	1	1	1
15	1111	1	1	0
Total Zeros	32		Total	24

FIG. 26

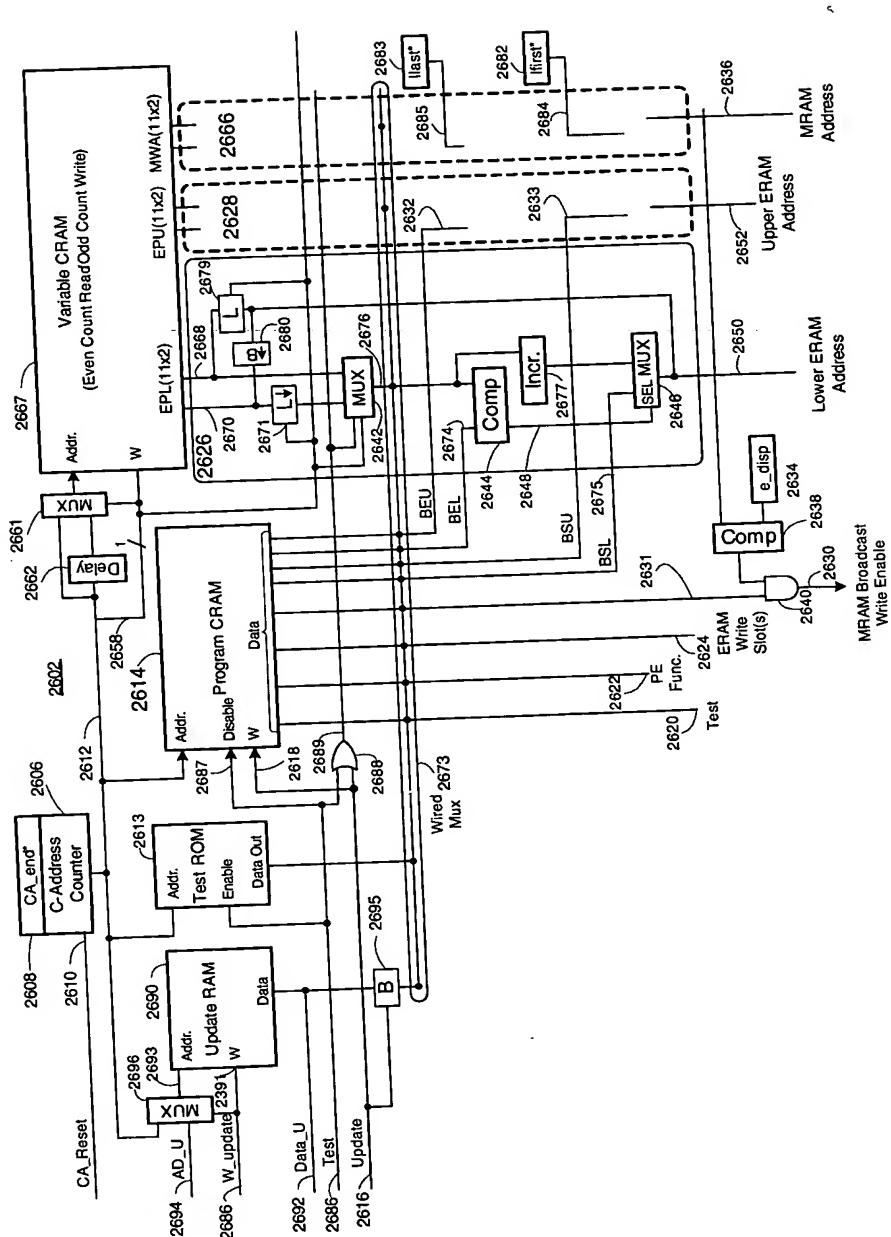


FIG. 27

Simple Dual Time Base Example (3-LS and 2-MS Example)

Input Value	First Time Base (Simple Binary)							Second Time Base							Delta	
	MS	LS	Time	Bit Position	Time Value	Cumm. Value	Time	MS	LS	Bit Position	Time Value	Cumm. Value	First-Second	% Diff		
0	0	0	0.000	LS=0	0	0.000	0.000	0	0	LS=0	0	0.000	0.000	0.0		
1	0	1	0.032	LS=1	0.032	0.032	0.035	0	1	LS=1	0.035	0.035	-0.003	-9.4		
2	0	2	0.065	LS=2	0.033	0.065	0.070	0	2	LS=2	0.035	0.070	-0.005	-7.7		
3	0	3	0.097	LS=3	0.032	0.097	0.105	0	3	LS=3	0.035	0.105	-0.008	-8.2		
4	0	4	0.129	LS=4	0.032	0.129	0.139	0	4	LS=4	0.034	0.139	-0.010	-7.8		
5	0	5	0.161	LS=5	0.032	0.161	0.174	0	5	LS=5	0.035	0.174	-0.013	-8.1		
6	0	6	0.194	LS=6	0.033	0.194	0.209	0	6	LS=6	0.035	0.209	-0.015	-7.7		
7	0	7	0.226	LS=7	0.032	0.226	0.209	0	6	LS=7	0.035	0.244	0.017	7.4		
8	1	0	0.258	MS=0	0.000	0.000	0.244	0	7	MS=0	0.000	0.000	0.014	5.4		
9	1	1	0.290	MS=1	0.258	0.258	0.279	1	0	MS=1	0.279	0.279	0.011	3.8		
10	1	2	0.323	MS=2	0.258	0.516	0.314	1	1	MS=2	0.261	0.540	0.009	2.8		
11	1	3	0.355	MS=3	0.258	0.774	0.349	1	2	MS=3	0.251	0.791	0.006	1.7		
12	1	4	0.387				0.384	1	3				0.003	0.8		
13	1	5	0.419				0.418	1	4				0.001	0.2		
14	1	6	0.452				0.453	1	5				-0.001	-0.2		
15	1	7	0.484				0.488	1	6				-0.004	-0.9		
16	2	0	0.516				0.523	1	7				-0.007	-1.4		
17	2	1	0.548				0.540	2	0				0.008	1.5		
18	2	2	0.581				0.575	2	1				0.006	1.0		
19	2	3	0.613				0.610	2	2				0.003	0.5		
20	2	4	0.645				0.645	2	3				0.000	0.0		
21	2	5	0.677				0.679	2	4				-0.002	-0.3		
22	2	6	0.710				0.714	2	5				-0.004	-0.6		
23	2	7	0.742				0.749	2	6				-0.007	-1.0		
24	3	0	0.774				0.784	2	7				-0.010	-1.3		
25	3	1	0.806				0.791	3	0				0.015	1.9		
26	3	2	0.839				0.826	3	1				0.013	1.5		
27	3	3	0.871				0.861	3	2				0.010	1.1		
28	3	4	0.903				0.896	3	3				0.007	0.8		
29	3	5	0.935				0.930	3	4				0.005	0.5		
30	3	6	0.968				0.965	3	5				0.003	0.3		
31	3	7	1.000				1.000	3	6				0.000	0.0		

FIG. 28

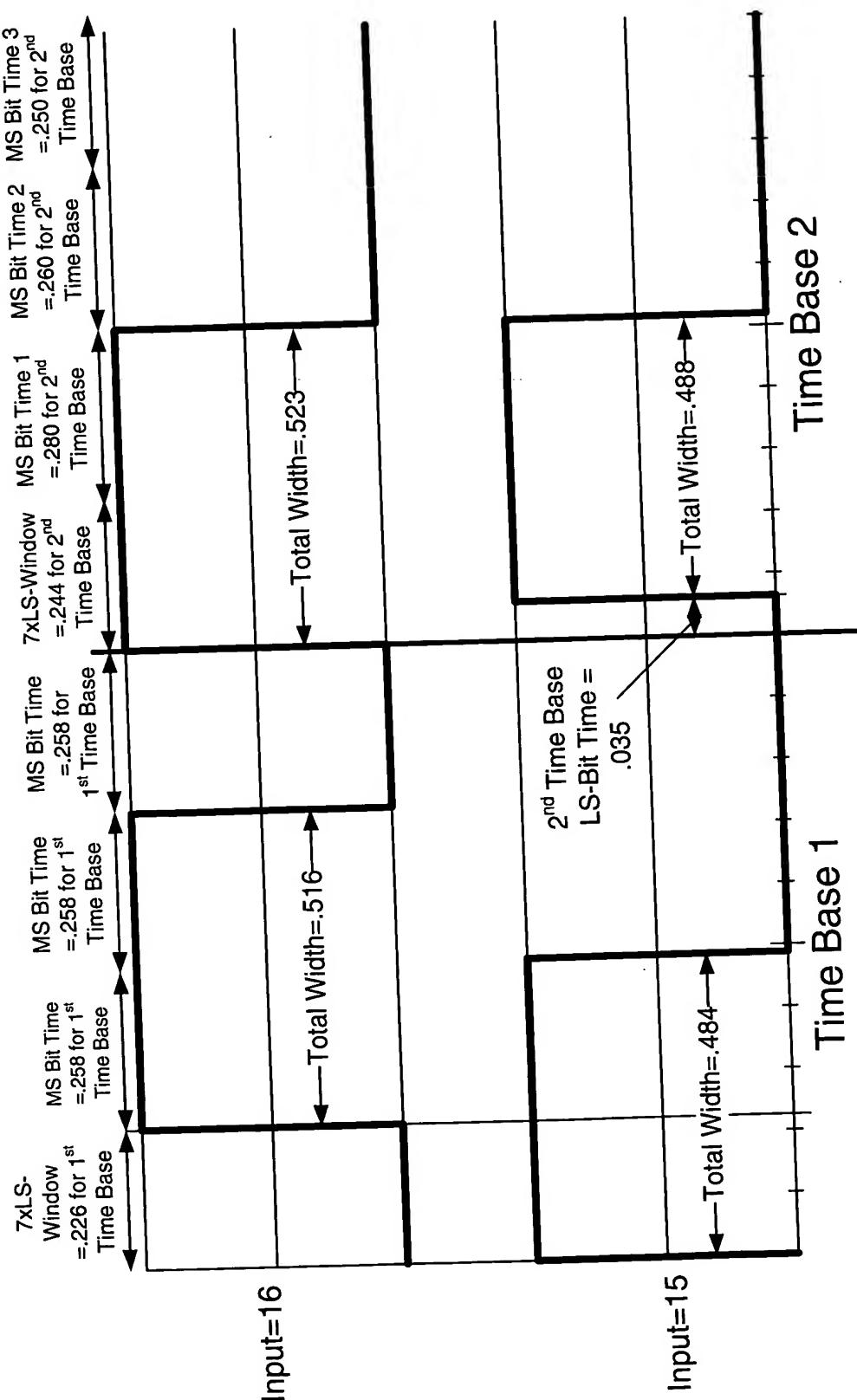


FIG. 29

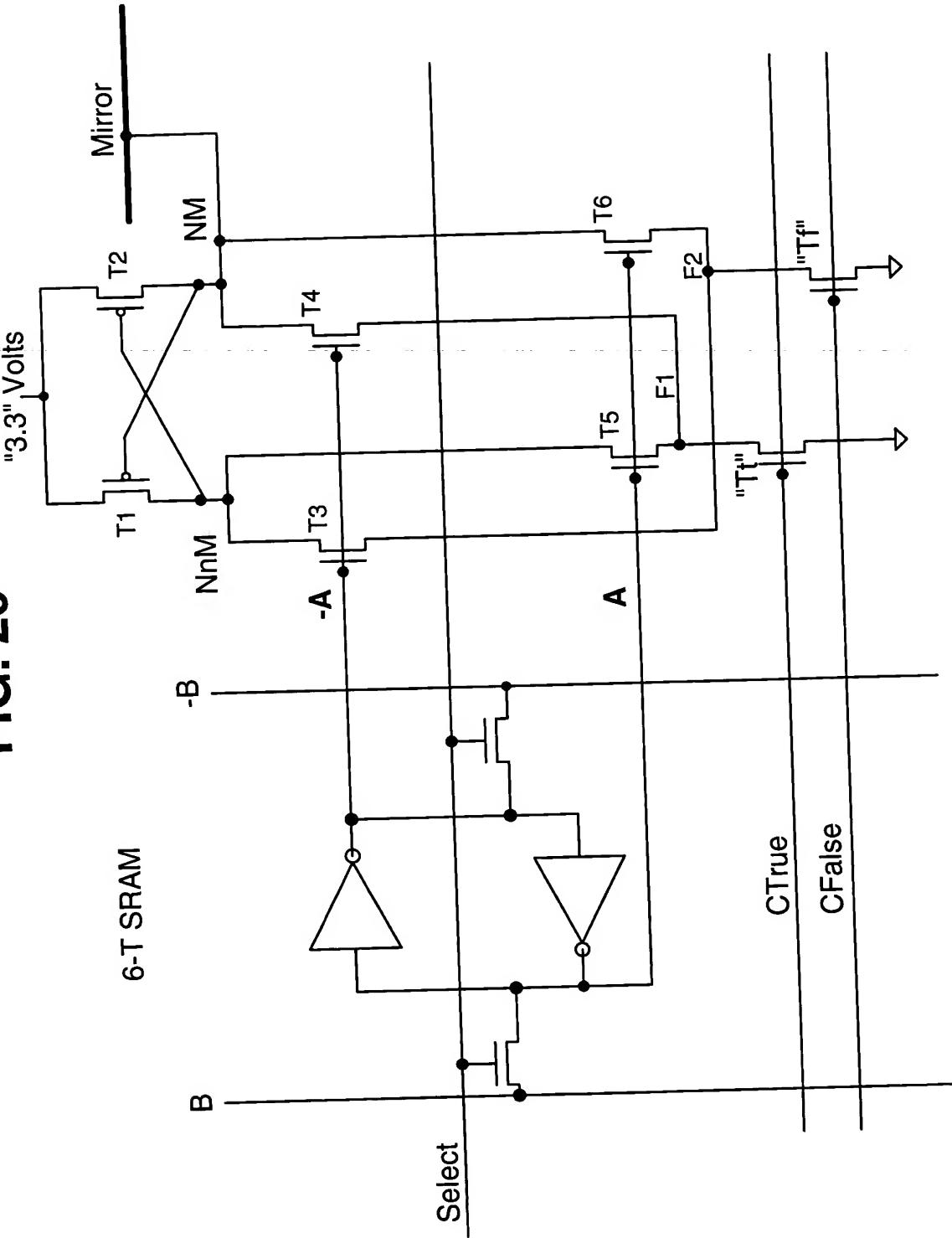


FIG. 30

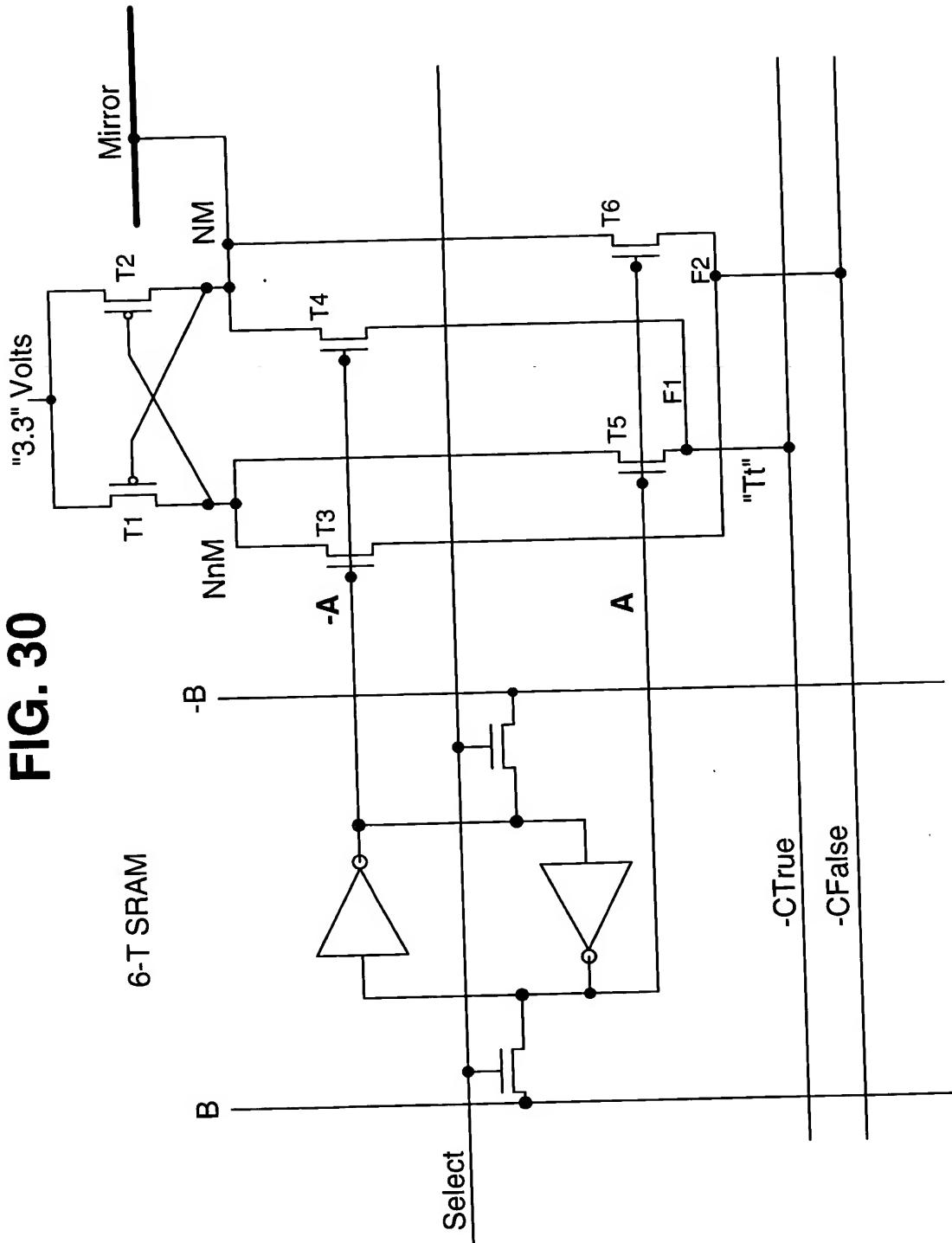


FIG. 31

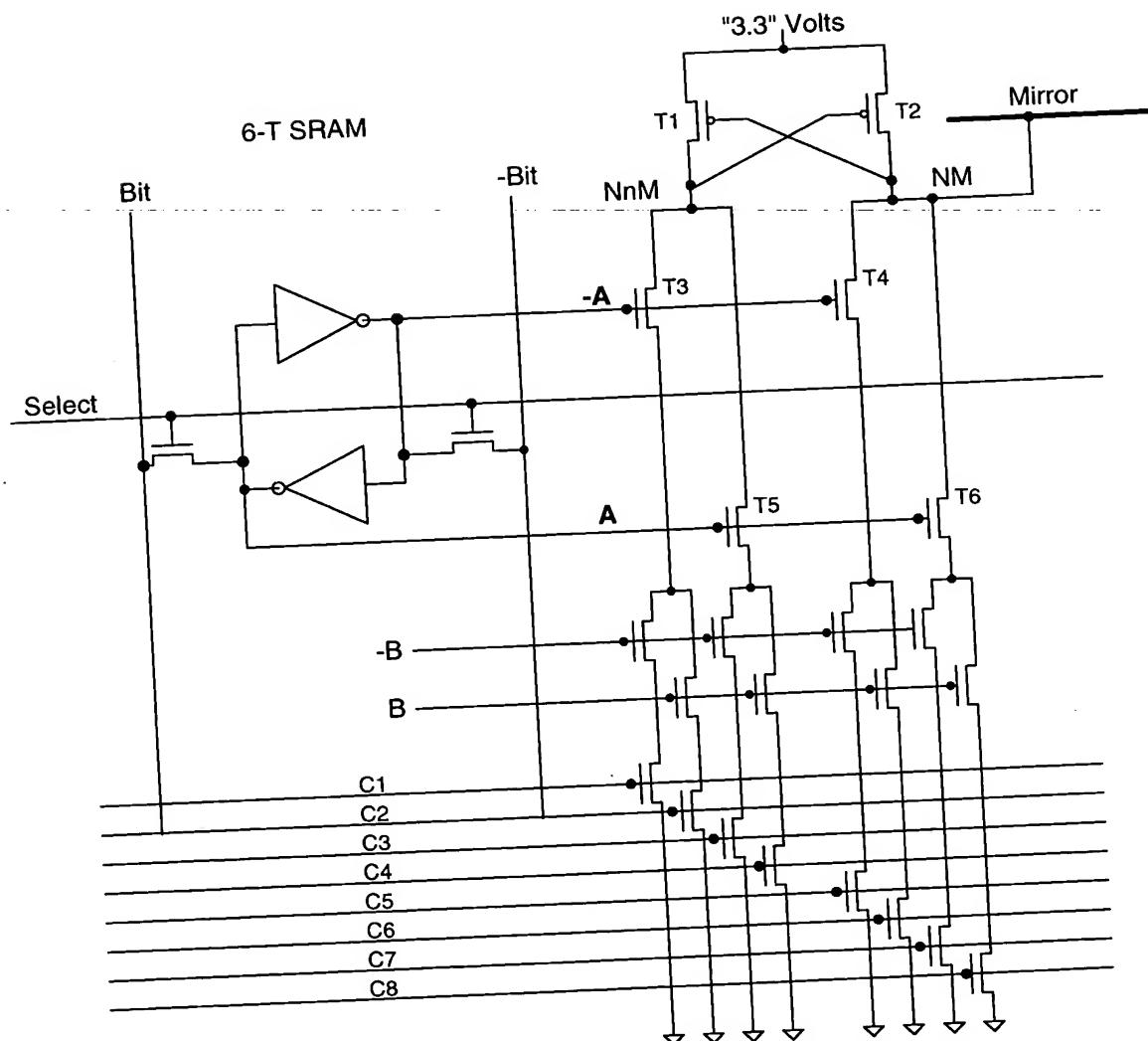


FIG. 32

